DOCUMENT RESUME

ED 443 810 SP 039 368

AUTHOR Bichelmeyer, Barbara A.

TITLE Interactivism: Change, Sensory-Emotional Intelligence, and Intentionality in Being and Learning.

PUB DATE 2000-04-28

NOTE 17p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000).

PUB TYPE Opinion Papers (120) -- Speeches/Meeting Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS Educational Change; Educational Philosophy; Educational Theories; Elementary Secondary Education; Intention; *Interaction

IDENTIFIERS *Interactive Teaching; *Reality

ABSTRACT

This paper documents the theoretical framework of interactivism; articulates the pedagogical theory which frames its assumptions regarding effective educational practice; positions the pedagogy of interactivism against traditional pedagogical practice; and argues for the educational importance of the interactivist view. Interactivism is the term used to describe a philosophical view which assumes that: reality is multiple, changing, and based on physical and natural forces of action and research; truth becomes known when senses and emotions interact with cognition as people react to and act upon their changing realities; and intentionality is good in that it allows people to gain some measure of power over the changing and unpredictable realities of their lives. Interactivist pedagogical theory assumes that the purpose of education is to create sentient learners who are able to recognize and intentionally adapt to changes and variations they experience in their everyday lives. The paper concludes that the interactivist philosophical and pedagogical view may be a starting point for moving beyond the common school model in order to find an answer to the question of how to educate each and every student. (Contains 28 references.) (SM)

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ED 443 810

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Barbara A. Bichelmeyer

Indiana University

B.A. Bichelmeyer

Contact Information:
Barbara A. Bichelmeyer, Ph.D., Assistant Professor
Department of Instructional Systems Technology, Indiana University
201 North Rose Ave., #2226, Bloomington, IN 47405-1006
Phone: 812-856-8468
Email: bbichelm@indiana.edu

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Interactivism:

Change, Sensory-Emotional Intelligence, And Intentionality In Being And Learning

The 20th century has been marked by the progression of educational philosophy and pedagogy through three movements known as behaviorism, cognitivism and constructivism (Ertmer & Newby, 1993). At the dawn of the 21st century, developments in research and critical scholarship may be leading to another shift in the progression of educational philosophy and pedagogy, toward to a position which has been labeled "interactivism."

The purpose of this paper is to document the theoretical framework of interactivism; to articulate the pedagogical theory which frames its assumptions regarding effective educational practice; to position the pedagogy of interactivism against traditional pedagogical practice; and to argue for the educational importance of the interactivist view.

Theoretical Framework

Morris & Pai (1976) state that the discipline of philosophy is primarily concerned with addressing three questions: what is real (metaphysics)?, what is true (epistemology)?, what is good (axiology)?. The behaviorist, cognitivist and constructivist positions in regard to these three questions are outlined in Table 1 (Schunk, 1986; Ertmer & /Newby, 1993), and represent an additional philosophical position labeled "interactivism", as it compares to these three major philosophical movements.

The label "interactivism" is the term used to describe a philosophical view which assumes that: reality is multiple, changing and in variation based upon physical and natural forces of action and reaction; truth becomes known when senses and emotions interact with cognition as we react to and act upon our changing realities; and intentionality is good in that it allows individuals to gain some measure of power over the changing and unpredictable realities of their lives. The label "interactivism" is the single term that best represents the cycles of reaction and action which create changing realities, which create the balance between sensory-emotional and cognitive systems that leads to intelligence, and which create the tension between an individual's intention and the changing forces of his or her environment.

The rationale for the metaphysical argument that reality is multiple, changing and in variation is supported by work in various disciplines. In quantum physics, it is assumed that light is both a particle and a wave (Wolf, 1989). If the viewing of particle or wave is not dependent upon some action of the viewer, then it may be considered as an indication that light has reality of its own (an objective reality), which is multiple in that it is *both* particle and wave, and is characterized by variation and change in that during any particular observation a viewer may see either manifestation of light. This unpredictable nature of reality further supports the notion that reality is objective because, if reality were subjective, the viewer should be able to predict whether they would see a particle or a wave. Current work in other disciplines – chaos theory in mathematics (Gleick, 1987) which assumes

randomness and unpredictability in the universe; forecasting theory in economics which assumes that prediction is impossible (Begley, 1999); and theologian Charles Hartshorne's (1984) theory that God can not know the future and therefore God's mind and plans can be changed and influenced by the acts of man –would seem to support the view that the nature of reality is objective, multiple and characterized by variation and change. These arguments are each specific justifications for an idea as old as classical western civilization, since it was Heraclitus who is supposed to have said, "only change is permanent."

If reality is objective, multiple, changing and unpredictable, then it follows that there must be multiple truths which are outside of us and which are constantly changing. If objective truth is constantly varying, then it seems appropriate to assume that human sensory-emotional systems and processes which recognize and respond to change and variation must be of primary importance in coming to know truth. As argued by Norretranders (1998), since most of what we know and do happens unconsciously, we should give more respect to our emotions because they are closer to reality than the perceived reality of consciousness. The epistemological view of interactivism assumes that we experience truth through sensory-emotional systems and consequently explain and bring intention to our experiences through cognition. This view is supported by recent research in neurobiology and developmental psychology (Cytowic, 1996; Damasio, 1994; Greenspan, 1997; Lazarus, 1991; LeDoux, 1996). Research in these fields provides support for the assumption that humans act our way into thinking just as much as, or more than,

we think our way into acting. The interactivist position, then, views sensory and emotional processes as partners that are at least equal in importance to cognitive processes in the experience of truth. Sensation, emotion and cognition are *all* essential to intelligence, which is defined by interactivism as the ability to react to, explain and act upon truth in ways that foster purposeful adaptation to change.

Intelligence, then, begins with sensory-emotional reaction (at which point a person is controlled by their environment) and culminates when an individual's reflection upon their reaction leads to informed intentional action (at which point we once again control our changing circumstances). Interactivism takes the axiological position that this process of purposeful adaptation to change is good because it allows humans, as far as possible, to gain some measure of power over their personal environment, which is essential to individual survival and development. The importance of individual intentionality and control is surely supported in biology by Darwin's theories of survival of the fittest and adaptation of species; as well as in philosophy by Russell's (1995) theory that power is the basic element of all social action; in social psychology by May's (1972) theory that powerlessness corrupts; in developmental psychology by Greenspan's (1997) theory that intentionality is fundamental to human growth and development; in educational psychology by Glasser's (1988) models of choice/control theory in the classroom; and by Friere (1998), whose "pedagogy of the oppressed" and "pedagogy of hope" assume that educators should teach students to claim their personal power.

In summary, then, the philosophical position of interactivism assumes that change, sensory-emotional intelligence, and intentionality are the three basic elements that characterize the experience of human reaction and action as we interact with our world.

Pedagogical Theory

Sensory experience, emotional reaction and cognitive intention are *each* critical to human interaction with changing realities. It seems appropriate, then, that we should teach learners to use *both* emotional reaction and cognitive intention in order to adapt to the changes and variations they inevitably experience in their environment.

Interactivist pedagogical theory, assumes that the purpose of education is to create "sentient learners," learners who are able to recognize and intentionally adapt to changes and variations they experience in their everyday lives. The root of the term "sentient" is "sentire," which means "to feel" – in its various forms, this term refers to persons who perceive by the senses, who are capable of feeling emotion, and who have the quality of (cognitive) consciousness. In the context of interactivism, the term "sentient learner" is used to refer to persons who recognize and adapt to change through the engagement of sense, emotion and intentionality in learning.

How then, should we go about creating sentient learners? In a presentation at the 1998 Annual Conference of the American Educational Research Association (AERA), Mayer (1998) outlined the pedagogical theories of behaviorism, cognitivism

and constructivism. That outline is reproduced in Table 2, adding a column in order to contrast the pedagogical theory of interactivism with the pedagogical theories attributed to each of these movements.

In order to create sentient learners, all elements of an educational system should be made to work together to support the development of sensory-emotional intelligence by providing experience-based learning activities, to foster students' intentionality by encouraging student-control of the learning environment, and to respect change and variation in the learning environment as well as in and between individual learners.

Pedagogical Practice

Having just outlined the philosophical position and pedagogical theory of interactivism, the author acknowledges that educational philosophy and pedagogical theory have had minimal impact on the general and typical practice of education in American schools. Simply put, to this point in history, none of these theories – not behaviorism, not cognitivism, not constructivism, and certainly not interactivism – have made much more than a dent in changing the 150-year-old educational practices of the common school. While each philosophical position has had it's proponents and model schools (behaviorism has fostered experimentation with individualized instruction, cognitivism has fostered experimentation with computer-based learning, and constructivism has fostered experimentation with student-centered learning), the main stream of American educational practice

continues to ascribe to the principles of standardization, cognitive reason and teacher control – which are the hallmarks of the common school.

Though not based on a particular pedagogical theory, the common school model was based on a particularly well-argued philosophical position which was developed and disseminated almost single-handedly by Horace Mann. In 1837, Mann was selected to be the first Superintendent of the State Board of Education of Massachusetts. From that time until his death, Mann was wholly devoted to developing a system of compulsory schooling which would ensure that the then greatly increasing number of Massachusetts citizens would be appropriately indoctrinated to the virtues of industrialization and would develop the appropriate ethical foundations, knowledge base and skill-sets required to live in a newly industrialized world (Messerli, 1972).

Mann was concerned with creating a system that would answer the question, "How is it possible to educate *all* students?" "He thought of children not as individuals... children were not children, but a generalized mass of statistics needing training...the education of a single child held no interest to him" (Messerli, 1972, p. 342). Because Massachusetts was the first State to engage in the endeavor and because of Mann's wide-spread reputation, it was not long before his common school model was adopted across the United States.

Perhaps there has been so little change in American education over the past 150 years because the common school model has been tenaciously faithful to its own philosophical foundations, which were structured by Mann. Mann was the

personification of three principles: 1) the industrial-age faith in standardization of all things, 2) the singular ability of cognitive reason to ensure the progress of man, and 3) "a will to power over the minds of [lesser] men" (Messerli, 1972, p. 338). The institution Mann fashioned, the common school, was an almost perfect reflection of his commitments to rigid standardization, to the definition of intelligence as cognitive reason, and to the notion that "common man required guidance by enlightened men of good will" (Messerli, 1972, p. 281).

It is important to note that Mann's philosophical view is the antithesis of the philosophical position of interactivism: standardization versus change, cognitive intelligence versus sensory-emotional intelligence, and external control versus self-intention. Table 3 demonstrates the contrasts between the pedagogical elements of the common school and the pedagogical elements proposed by interactivist pedagogy, which may be aptly described using Benjamin's (1949) term as "uncommon school."

Philosophical and Pedagogical Importance of the Interactivist View

After 150 years, the vast majority of American schools still follow the common school model. The term "falling through the cracks" has been created to refer to the great number of students who are not able to fit into its common mold. Instead of changing classrooms to meet these students' needs, we take them out of the classroom and put them into programs for "special" or "gifted" students (as if only certain students are special or gifted).

Urban and Wagoner (1996) have concluded that the most important issues schools face today are the appearance of violence, weapons, and drugs in classrooms, and the desegregation and multiculturalism of schools. Each one of these issues is, in the author's view, a direct result of the disenfranchisement and disengagement that occur in students when schools are unable to change to meet new needs, unwilling to acknowledge variation in student performance, uninterested in the varieties of intelligence that students possess, and when schools does not permit students to express intention or take active responsibility for their own learning. It is my view that the problems found in schools today are the legacy of Horace Mann and his common school model. The interactivist philosophical and pedagogical view may be a starting point for moving beyond the common school model, and for finding an answer to that singularly critical question, "how do we educate all and also educate each?"

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Table 1:
Positions of three major educational philosophies compared to interactivism

Philosophical Question:	Behaviorism	Cognitivism	Constructivism	Interactivism
What is real? (Metaphysics)	Reality is objective and outside of us; it is permanent, static, unchanging	Reality is objective and permanent, but is experienced subjectively by individuals	Reality is subjective; each person has their own reality	Reality is objective, multiple, changing and varying, and unpredictable. It is experienced subjectively by individuals
What is true? (Epistemology)	Truth is outside of us, it is permanent, static and unchanging	Truth is "known" when we match internal schema to external reality	Truth is internal to us, based on our negotiated meanings, what we agree to be true	Truth changes and varies; we experience it first through senses & emotion in reaction, and use cognition to explain & bring intention to action
What is good? (Axiology)	Individual actions that result in receiving external rewards	Developing accurate schematic representations of reality	Collaborative agreement that allows for shared truth	Intentionality (reflection & purposeful action) gives us power over changing & unpredictable circumstances

Table 2:
Positions of three major pedagogical theories compared to interactivism

	Behaviorism	Cognitivism	Constructivism	Interactivism
Learning is:	Response strengthening	Information processing	Knowledge construction	Purposeful adaptation to change
Based on:	Laboratory animals completing artificial tasks	Students in artificial tasks	Students in realistic tasks	Students reaction and action in real, changing learning situations
The teacher is:	Dispenser of rewards and punishment	Dispenser of information	Guide for exploring academic tasks	Model sentient learner
The student is:	Recipient of rewards and punishment	Recipient of information	Sense-maker	Sentient learner – intentional, experiential, self-evaluator
Typical instructional method is:	Drill and practice	Textbooks and lecture	Discussion, guided discovery and supervised participation on academic tasks	Student-negotiated learning plans, experience-based activities, students evaluate change

Table 3:
Contrast of pedagogical elements in common and "uncommon" schools

Pedagogical element:	Common school:	Uncommon school:
Curriculum	• Subject-matter based • No standards	• Performance-based • Negotiated Standards
Assessment	• Standardized tests	• Competency-based measures
Instructional Strategies	• Group-paced • Timed progress • Lecture-oriented • Targeted to center	• Individual learning plans • Mastery learning • Experiential • Accepts variation in learners
Evaluation and feedback	• Norm-referenced • Sorting (A-F scale) • Punitive • Uses objective tests	• Criterion-referenced tests and feedback • Progress to competency • Self-evaluation • Authentic evaluations
Role of teacher	• Information dissemination • Little assessment & evaluation	• Model learner • Diagnosis and feedback
Role of student	• Student as instructional product: • Passive/disengagement • Lacking responsibility (no clear goals) • One who is evaluated	• Student as instructional designer: • Active engagement • Intentionality in learning (setting personal goals) • Self-evaluation
Tools/resources	• Tool/resource-poor • Tools for teacher use	• Tool-resource rich • Tools for student use